Topic C:

**Transformations of Functions**

A-REI.D.11, F-IF.C.7a, F-BF.B.3

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| Focus Standard: | A-REI.D.11 | Explain why the*-*coordinates of the points where the graphs of the equations and intersect are the solutions of the equation; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where and/or are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.★ |
|  | F-IF.C.7a | Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★   1. Graph linear and quadratic functions and show intercepts, maxima, and minima. |
|  | F-BF.B.3 | Identify the effect on the graph of replacing by , and for specific values of *k* (both positive and negative); find the value of *k* given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.* |
| Instructional Days: | 6 |  |
| Lesson 15: | Piecewise Functions | |
| Lesson 16: | Graphs Can Solve Equations Too | |
| Lessons 17-20: | Four Interesting Transformations of Functions | |

Lesson 15 of this Topic formalizes the study of piecewise functions that began in Module 1. The study of piecewise functions in this lesson includes step functions and the absolute value function. Piecewise functions work nicely in the remaining lessons of this topic beginning with Lesson 16, where students learn that an equation , such as , can be solved by finding the intersection points of the graphs of and . Students use technology in this lesson to create the graphs and observe their intersection points. Next, in Lessons 17-20 students use piecewise functions as they explore four transformations of functions: , and .